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Atty. Dkt. No. 069974-0140

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Masahiro IWADARE

Title: FAST CALCULATION APPARATUS FOR CARRYING OUT A FORWARD AND AN INVERSE TRANSFORM

Appl. No.: 10/642,968

Filing Date: 08/19/2003

Examiner: C. Ngo

Art Unit: 2124

AMENDMENT TRANSMITTAL

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith is an amendment in the above-identified application.

[ ] Small Entity status under 37 C.F.R. § 1.9 and § 1.27 has been established by a previous assertion of Small Entity status.

[ ] Assertion of Small Entity status is enclosed.

[**X**] The fee required for additional claims is calculated below:

	Claims As Amended		Previously Paid For		Extra Claims Present		Rate		Additional Claims Fee
Total Claims:	43	-	43	=	0	x	$18.00	=	$0.00
Independent Claims:	10	-	10	=	0	x	$88.00	=	$0.00
	First presentation of any Multiple Dependent Claims:					+	$300.00	=	$0.00
							CLAIMS FEE TOTAL	=	$0.00

[ ] Applicant hereby petitions for an extension of time under 37 C.F.R. §1.136(a) for the total number of months checked below:

[ ]	Extension for response filed within the first month:	$110.00	$0.00
[ ]	Extension for response filed within the second month:	$430.00	$0.00
[ ]	Extension for response filed within the third month:	$980.00	$0.00
[ ]	Extension for response filed within the fourth month:	$1,530.00	$0.00
[ ]	Extension for response filed within the fifth month:	$2,080.00	$0.00
		EXTENSION FEE TOTAL:	$0.00
[ ]	Statutory Disclaimer Fee under 37 C.F.R. 1.20(d):	$110.00	$0.00
		CLAIMS, EXTENSION AND DISCLAIMER FEE TOTAL:	$0.00
[ ]		Small Entity Fees Apply (subtract ½ of above):	$0.00
		TOTAL FEE:	$0.00

[ ] Please charge Deposit Account No. 19-0741 in the amount of $0.00. A duplicate copy of this transmittal is enclosed.

[ ] A check in the amount of $0.00 is enclosed.

[X] The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,

Date 10/8/04

By _____

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR(S):	Masahiro IWADARE
Title:	FAST CALCULATION APPARATUS FOR CARRYING OUT A FORWARD AND AN INVERSE TRANSFORM
Application Number:	10/642,968
Filing Date	08/19/2003
Examiner:	C. Ngo
Art Unit:	2124

AMENDMENT

Assistant Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Please amend the pending reissue application claims as follows:

12. (Amended) An apparatus as recited in claim 7, said internal transform carrying out means producing, as said internal signal, a succession of zeroth through (p-1)th and pth through (N/2-1)th internal data, where N represents an integral multiple of four, p being variable between 0 and (N/2-1), both inclusive, wherein said second processing device comprises:

a multiplier connected to said internal transform carrying out means, said multiplier multiplying said pth internal datum and $\exp(2\pi j(p+1/2)/2N)$ resulting in a local product to make said inverse transformed signal represent said local product, j representing an imaginary unit, said local product being a succession of zeroth through (N/4-1)th and (N/4)th through (N/2-1)th product data;

a particular processing means connected to said multiplier for processing said zeroth through said (N/4-1)th product data into a first succession of [(3/N4-

1)](3N/4-1)th through (N/2)th particular data in a descending order and a second succession of (3N/4)th through Nth particular data in an ascending order, said particular data of said first and said second successions having a first polarity in common; and

a specific processing means connected to said multiplier for processing said (N/4)th through (N/2-1)th product data into a first succession of zeroth through (N/4-1)th specific data in an ascending order and a second succession of (N/2-1)th through (N/4)th specific data in a descending order, the specific data of said first and said second successions having a second polarity in common, said second polarity being different from said first polarity.

35. (Amended) An apparatus for carrying out an inverse modified discrete cosine transform comprising:

an input signal having M samples, M being an integer;

transform carrying out means carrying out a linear inverse modified discrete cosine transform on said input signal and for outputting an inverse modified discrete cosine transformed signal having M samples representative of said linear inverse modified discrete cosine transform; and

a multiplier connected to said transform carrying out means, said multiplier multiplying a predetermined inverse transform window function and said linear inverse modified discrete cosine transformed signal to produce a product signal having N samples, N being an integer different from M, wherein said transform carrying out means comprises:

a first processing device which receives said input signal, said first processing device outputting a processed signal;

internal transform carrying out means connected to said first processing device for carrying out an inverse fast Fourier transform on said processed signal and for outputting as a result of processing said inverse fast Fourier transform an internal signal; and

a second processing device connected to said internal transform carrying out means to receive said internal signal and output as a result of processing said internal signal said inverse modified discrete cosine transformed signal.

41. (Amended) An apparatus for carrying out an inverse transform comprising:

an input signal y(m,k) having M samples, M being an integer;

transform carrying out means for carrying out a linear inverse transform on said input signal y(m,k) and for outputting an inverse transformed signal xt(m,n) representative of a result of said linear inverse transform, said linear inverse transform being defined by:

$$xt(m,n) = 2/N \sum_{k=0}^{M-1} y(m,k) \cos[2\pi(n+n0)(k+1/2)/N]$$

where m represents a block number, n represents a sample number, N represents a block length and k is an integer between 0 and M-1;

a multiplier connected to said transform carrying out means, said multiplier multiplying a predetermined inverse transform window function and said inverse transformed signal xt(m,n) to produce a product signal having N samples, N being an integer different from M;

wherein said transform carrying out means comprises:

a first processing device which receives said input signal y(m,k)and outputs a processed signal, said processed signal comprising a product signal formed by multiplying said input signal y(m,k) by a predetermined factor;

internal transform carrying out means connected to said first processing device for carrying out an inverse fast Fourier transform on said processed signal and for outputting as a result of said inverse fast Fourier transform an internal signal; and

a second processing device connected to said internal transform carrying out means to receive said internal signal and output as a result of processing said internal signal said inverse transformed signal.